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TITLE: FERROELECTRIC MEMORY AND MANUFACTURE THEREOF

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ABSTRACT:

PROBLEM TO BE SOLVED: To enhance the rectangularity ratio of a hysteresis curve with a residual dielectric polarization value and enable low-voltage driving with a high SN ratio at the time of polarization inversion, by orienting the axes of polarization of specific ones of the crystal grains of a ferroelectric film containing PbxZr(1-y)TiO_3 , perpendicularly to the surface of the film.

SOLUTION: A SiO_2 film 2 is formed on a semiconductor substrate 1 composed of Si. CeO_2 the surface of which is oriented in (001) plane is formed as a buffer layer 3 on the SiO_2 film 2. A lower electrode 4 the surface of which is oriented mainly in (111) plane and in (100) plane is formed on the buffer layer 3. The surfaces of the crystal grains of the lower electrode 4 are oriented in (100) plane and a Pt film containing 10% or more of such crystal grains is formed. a PZT film 5 is formed on the lower electrode 4 and the surface of the film 5 is oriented mainly in (001) plane and in (111) plane. Of these crystal

planes, 10% or more of (001) planes containing a polarization axis are made to exist. That is, the axes of polarization of 10% or more of the crystal grains in the surface of the PTZ film 5 are perpendicularly oriented, and a Pt film oriented mainly in (111) plane is formed as an upper electrode 6 on the film 5.

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